

IN THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) A sensor arrangement comprising:  
a substrate;  
a plurality of sensor elements, each sensor provided as an integrated circuit in the substrate;  
electronic circuitry comprising:
  - i) a processing circuit arranged on the substrate and connected to at least one of the sensor elements, the processing circuit being configured to process a signal generated by the at least one of the sensor elements;
  - ii) an input/output interface arranged on the substrate and connected to the processing circuit; and  
a power supply unit arranged on the substrate and configured to supply operating power only to electronic circuitry associated with sensor elements which are in use.
2. (Original) The sensor arrangement according to claim 1, in which the plurality of sensor elements is distributed over the substrate in a predetermined manner.
3. (Previously Presented) The sensor arrangement according to claim 1, in which electronic circuitry associated with each one of the plurality of sensor elements is distributed over the substrate in a predetermined manner.
4. (Original) The sensor arrangement according to claim 1, wherein the sensor is an optical sensor.
5. (Original) The sensor arrangement according to claim 1, wherein the substrate is configured to fit into a wafer chuck of a lithographic apparatus.
6. (Original) The sensor arrangement according to claim 1, wherein at least one of the processing circuit, the input/output interface, and the power supply unit is provided as an

integrated circuit in the substrate.

7. (Original) The sensor arrangement according to claim 1, wherein the processing circuit is connected to a memory configured to store at least one among software code and data.
8. (Original) The sensor arrangement according to claim 1, wherein the input/output interface is arranged to exchange data with an external device using a wireless communication technique.
9. (Original) The sensor arrangement according to claim 1, wherein the sensor arrangement further comprises a chuck on which the sensor arrangement is disposed, the chuck being mountable to a wafer stage of a lithographic apparatus.
10. (Original) The sensor arrangement according to claim 9, wherein the chuck comprises an interface configured to connect the sensor arrangement to a data network of the lithographic apparatus.
11. (Previously Presented) A sensor arrangement comprising:
  - a substrate; and
  - a plurality of components comprising:
    - i) at least one sensor element provided as an integrated circuit in the substrate;
    - ii) a processing circuit connected to the at least one sensor element;
    - iii) an input/output interface connected to the processing circuit; and
    - iv) a power supply unit said power supply unit configured to supply operating power to at least one other component of the sensor arrangement, wherein the power supply unit is arranged to convert a wireless signal having a first predetermined frequency into a supply voltage for a first part of the sensor arrangement and to convert wireless energy having a second predetermined frequency into a supply voltage for a second part of the sensor arrangement different from the first part.

12. (Currently Amended) A lithographic apparatus comprising:  
a substrate; and  
one or more sensor arrangements, each sensor arrangement having:  
i) a plurality of sensor elements, each sensor element provided as an integrated circuit in the substrate and associated with electronic circuitry that comprises:  
a) a processing circuit arranged on the substrate and connected to at least one of the sensor elements, the processing circuit being configured to process a signal generated by the at least one of the sensor elements; and  
b) an input/output interface arranged on the substrate and connected to the processing circuit; and  
ii) a power supply unit arranged on the substrate and configured to supply operating power only to electronic circuitry associated with one or more of the plurality of sensor elements which are in use.
13. (Original) The lithographic apparatus according to claim 12, in which the plurality of sensor elements is distributed over the substrate in a predetermined manner.
14. (Original) The lithographic apparatus according to claim 12, in which the electronic circuitry associated with each one of the plurality of sensor elements is distributed over the substrate in a predetermined manner.
15. (Original) The lithographic apparatus according to claim 12, wherein the substrate is configured to fit into a wafer chuck of the lithographic apparatus.
16. (Original) The lithographic apparatus according to claim 12, wherein at least one of the processing circuit, the input/output interface, and the power supply unit is provided as an integrated circuit in the substrate.
17. (Original) The lithographic apparatus according to claim 12, wherein the processing circuit is connected to a memory configured to store at least one among software code and data.

18. (Original) The lithographic apparatus according to claim 12, wherein the input/output interface is arranged to exchange data with an external device using a wireless communication technique.

19. (Original) The lithographic apparatus according to claim 12, wherein the lithographic apparatus further comprises a chuck disposed on a wafer stage of the lithographic apparatus and on which the sensor arrangement is disposed.

20. (Original) The lithographic apparatus according to claim 19, wherein the chuck comprises an interface configured to connect the sensor arrangement to a data network of the lithographic apparatus.

21. (Previously Presented) A lithographic apparatus comprising:  
a sensor arrangement comprising:

a substrate; and

a plurality of components comprising:

at least one sensor element provided as an integrated circuit in the substrate;

a processing circuit connected to the at least one sensor element;

an input/output interface connected to the processing circuit; and

a power supply unit configured to supply operating power to at least one other component of the sensor arrangement, wherein the power supply unit is arranged to convert a wireless signal having a first predetermined frequency into a supply voltage for a first part of the sensor arrangement and to convert wireless energy having a second predetermined frequency into a supply voltage for a second part of the sensor arrangement different from the first part, and

a projection system configured to project a patterned beam of radiation onto a target portion of the substrate, wherein the sensor arrangement is arranged to measure an aberration of the projection system.

22. (Currently Amended) A method for measuring optical properties of a device arranged to process substrates, comprising:

introducing a sensor arrangement in the device and positioning the sensor arrangement in a measurement position;  
executing measurements using the sensor arrangement; and  
removing the sensor arrangement from the device, wherein the sensor arrangement comprises:

- i) a substrate;
- ii) a plurality of sensor elements, each sensor element provided as an integrated circuit in the substrate and associated with electronic circuitry comprising that comprises:
  - a) a processing circuit arranged on the substrate and connected to at least one of the sensor elements, the processing circuit being configured to process a signal generated by the at least one of the sensor elements; and
  - b) an input/output interface arranged on the substrate and connected to the processing circuit; and
  - ii) a power supply unit arranged on the substrate and configured to supply operating power only to electronic circuitry associated with one or more of the plurality of sensor elements which are in use.

23. (Original) The method according to claim 22, wherein the substrate is configured to fit into a wafer chuck of the device.

24. (Previously Presented) A method for measuring properties, of a device arranged to process substrates, comprising:

introducing a sensor arrangement into the device and positioning the sensor arrangement in a measurement position;  
executing measurements using the sensor arrangement; and  
removing the sensor arrangement from the device,  
wherein the sensor arrangement comprises:

- a substrate; and
- at least one sensor element provided as an integrated circuit in the substrate;
- a processing circuit connected to the at least one sensor element;
- an input/output interface connected to the processing circuit; and

a power supply unit configured to supply operating power to at least one other component of the sensor arrangement, wherein the power supply unit is arranged to convert a wireless signal having a first predetermined frequency into a supply voltage for a first part of the sensor arrangement and to convert wireless energy having a second predetermined frequency into a supply voltage for a second part of the sensor arrangement different from the first part.

25. (Currently Amended) A sensor arrangement comprising:
- a substrate;
  - a plurality of sensor elements, each sensor element provided as an integrated circuit in the substrate; and
  - electronic circuitry comprising:
    - i) a processing circuit arranged on the substrate and connected to at least one of the sensor elements, the processing circuit being configured to process a signal generated by the at least one of the sensor elements;
    - ii) an input/output interface arranged on the substrate and connected to the processing circuit; and
    - iii) a power supply unit arranged on the substrate and configured to supply operating power to a processing circuit associated with one or more of the plurality of sensor elements which are in use.
26. (Previously Presented) The sensor arrangement according to claim 25, in which the plurality of sensor elements are distributed over the substrate in a predetermined manner.
27. (Previously Presented) The sensor arrangement according to claim 25, in which electronic circuitry associated with each one of the plurality of sensor elements is distributed over the substrate in a predetermined manner.
28. (Previously Presented) The sensor arrangement according to claim 25, wherein the sensor element is an optical sensor.
29. (Previously Presented) The sensor arrangement according to claim 25, wherein the

substrate is configured to fit into a wafer chuck of a lithographic apparatus.

30. (Previously Presented) The sensor arrangement according to claim 25, wherein at least one of the processing circuit, the input/output interface, and the power supply unit is provided as an integrated circuit in the substrate.

31. (Previously Presented) The sensor arrangement according to claim 25, wherein the processing circuit is connected to a memory configured to store at least one among software code and data.

32. (Previously Presented) The sensor arrangement according to claim 25, wherein the input/output interface is arranged to exchange data with an external device using a wireless communication technique.

33. (Previously Presented) The sensor arrangement according to claim 25, wherein the sensor arrangement further comprises a chuck on which the sensor arrangement is disposed, the chuck being mountable to a wafer stage of a lithographic apparatus.

34. (Previously Presented) The sensor arrangement according to claim 33, wherein the chuck comprises an interface configured to connect the sensor arrangement to a data network of the lithographic apparatus.